Listing of Claims:

1. (Currently Amended) A circuit for generating a cyclic prefix of a symbol comprised of a sequence of samples in the time domain, said prefix being a reproduction of the last samples of the symbol at the beginning of the symbol, the symbol being obtained by inverse Fourier transform of complex coefficients corresponding to respective frequencies, the circuit comprising:

means for shifting the phase of each complex coefficient by a value proportional to its frequency;

means for generating the sequence of samples in time domain of the symbol via an inverse Fourier transform on the shifted complex coefficients such, so that said last samples of the symbol are shifted at the beginning of the symbol according to a circular permutation;

a memory for storing the shifted samples; and

means for copying at the end of the symbol the stored samples.

2. (Original) The cyclic prefix generation circuit of claim 1, wherein the means for shifting the phase of the complex coefficients include a multiplier connected to multiply each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient.

3. (Original) The cyclic prefix generation circuit of claim 1, wherein the memory is of FIFO type.

4. (Original) The cyclic prefix generation circuit of claim 1, wherein the means for copying the stored samples include a multiplexer, a first input and a second input of which are respectively connected to the input and to the output of the memory.

5. (Original) The cyclic prefix generation circuit of claim 1, wherein the means for shifting delays the symbol only by the duration of said prefix and the memory stores only the shifted samples without storing any of the samples of the symbol other than the shifted samples.

6. (Currently Amended) A method for generating a cyclic prefix of a symbol in the time domain, said prefix being a reproduction of the last samples of the symbol at the beginning of the symbol, the symbol being obtained by inverse Fourier transform of complex coefficients corresponding to respective frequencies, the method comprising the steps of:

shifting ~~the~~ a phase of each complex coefficient by a value proportional to the frequency with which it is associated;

performing an inverse Fourier transform on the shifted complex coefficients to generate the samples of the symbol in time domain such~~, so~~ that said last samples of the symbol are shifted at the beginning of the symbol according to a circular permutation;

storing the shifted samples of the beginning of the symbol in a buffer; and

copying the stored samples at the end of the symbol.

7. (Original) The method of claim 6, wherein shifting the phase of the complex coefficients includes multiplying each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient.

8. (Currently Amended) The method of claim 6, wherein the ~~storing step stores the samples in~~ buffer is a FIFO memory.

9. (Original) The method of claim 6, wherein the storing step stores only the last samples of the symbol without storing any of the samples of the symbol other than the last samples.

10. (Original) The method of claim 6 wherein the shifting step includes delaying the symbol only by the duration of said prefix and the storing step stores only the shifted samples without storing any of the samples of the symbol other than the shifted samples.

11. (Currently Amended) A method for transmitting a symbol represented in a frequency domain by complex coefficients corresponding to respective frequencies, the method comprising:

shifting a phase of each complex coefficient by a value proportional to the frequency with which the complex coefficient corresponds;

transforming the symbol to a time domain by using an inverse Fourier transform circuit to perform ~~performing~~ an inverse Fourier transform ~~of~~ on the phase-shifted complex coefficients to produce a set of samples as the symbol in the time domain; and

outputting the symbol in the time domain with a subset of the samples as a prefix of the symbol.

12. (Original) The method of claim 11, wherein shifting the phase of the complex coefficients includes multiplying each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient.

13. (Original) The method of claim 11, further comprising storing the subset of the samples in a memory prior to outputting the symbol.

14. (Original) The method of claim 13 wherein the storing step stores the samples in a FIFO memory.

15. (Original) The method of claim 13, wherein the storing step stores only the subset of samples of the symbol without storing any of the samples of the symbol other than the subset.

16. (Original) The method of claim 11 wherein the subset of the samples are samples produced from complex coefficients occurring at the end of the symbol in the frequency domain.

17. (Original) The method of claim 11, further comprising:

delaying the symbol only by the duration of said prefix; and

storing, prior to outputting the symbol, only the shifted samples without storing any of the samples of the symbol other than the shifted samples.

18. (New) The method of claim 11 wherein the set of samples is a sequence of samples that includes a first sample and a last sample, and wherein the subset of samples includes at least the first sample, and wherein outputting the symbol in the time domain with a subset of the samples as a prefix of the symbol includes:

sequentially providing, from the inverse Fourier transform circuit, each sample of the subset of samples to a buffer and a multiplexer, wherein the multiplexer sequentially outputs each respective sample provided thereto;

sequentially providing, from the inverse Fourier transform circuit, each sample that is not a member of the subset of samples to the multiplexer after the subset of samples are provided to the multiplexer; and

sequentially providing, from the buffer, each buffered sample from the subset of samples.

19. (New) A method of operating a discrete multitone (DMT) modulation transmitter of a symbol represented by a set of frequency-domain complex coefficients, each frequency-domain corresponding to a respective frequency, the method comprising:

shifting a phase of each frequency-domain complex coefficient of the set of frequency-domain complex coefficients by a value proportional to the respective frequency with which the respective frequency-domain complex coefficient corresponds;

providing the phase shifted set of frequency-domain complex coefficients to an inverse Fourier transform circuit;

generating a set of time-domain samples by the inverse Fourier transform circuit performing an inverse Fourier transform on the phase shifted set of frequency-domain complex coefficients;

buffering a subset of the set of time-domain samples, the subset of the set of time-domain samples being less than the set of time-domain samples and greater than zero;

outputting the subset of time-domain samples as a prefix of the symbol; and

outputting the symbol in the time-domain after outputting the prefix of the symbol.

20. (New) The method of claim 19 wherein buffering a subset of the set of time-domain samples includes:

buffering only the time-domain samples that are members of the subset of the set of time-domain samples in a first-in first-out buffer without buffering any one of the time-domain samples that is not a member of the subset of the set of time-domain samples.

21. (New) The method of claim 19 wherein outputting the symbol in the time domain after outputting the prefix of the symbol includes:

sequentially providing each time-domain sample of the set of time-domain samples that is not a member of the subset of the set of time-domain samples to a multiplexer that sequentially outputs each respective sample provided thereto; and

sequentially providing each buffered time-domain sample of the subset of the set of time-domain samples to the multiplexer after the multiplexer outputs each time-domain sample that is not a member of the subset.

22. (New) The method of claim 19 wherein shifting a phase of each frequency-domain complex coefficient of the set of frequency-domain complex coefficients by a

value proportional to the respective frequency with which the respective frequency-domain complex coefficient corresponds includes:

for each respective frequency-domain coefficient of the set of frequency-domain coefficients,

retrieving a respective complex number from storage,

providing the retrieved complex number and the respective frequency-domain coefficient to a complex multiplier, and

multiplying the retrieved respective complex number and the respective frequency-domain coefficient using the complex multiplier.

23. (New) The method of claim 19 wherein outputting the subset of time-domain samples as a prefix of the symbol includes:

setting a multiplexer having a first input coupled to the inverse Fourier transform circuit and a second input coupled to a memory to receive an input from the inverse Fourier transform circuit and to output received input, wherein the input is the set of time-domain samples.

24. (New) The method of claim 23 wherein the memory is coupled to the inverse Fourier transform circuit and wherein buffering a subset of the set of time-domain samples includes:

activating the memory to a write mode for a first period of time coinciding with when the inverse Fourier transform circuit outputs the subset of the set of time-domain samples, wherein the inverse Fourier transform circuit outputs members of the set of time-domain samples that are not members of the subset of the set of time-domain samples during a second period of time that is subsequent to the first period of time; and

writing the subset of the set of time-domain samples into the memory.

25. (New) The method of claim 24 wherein outputting the symbol in the time-domain after outputting the prefix of the symbol includes:

maintaining the multiplexer to continue to receive the input from the inverse Fourier transform circuit during the second period of time and to continue to output the received input;

setting the multiplexer to receive an input from the memory for a third period of time subsequent to the second period of time and to output the received input;

activating the memory to a read mode during third period of time; and

during the third period of time, providing the multiplexer with the subset of the set of time-domain samples written into the memory.